

# CODEX ALIMENTARIUS

INTERNATIONAL FOOD STANDARDS



Food and Agriculture  
Organization of  
the United Nations



World Health  
Organization

E-mail: [codex@fao.org](mailto:codex@fao.org) - [www.codexalimentarius.org](http://www.codexalimentarius.org)

---

## STANDARD FOR QUICK-FROZEN BILBERRIES

CXS 76-1981

Adopted in 1981. Amended in 2019, 2022.

**2022 Amendment**

Following decisions taken at the Forty-fifth Session of the Codex Alimentarius Commission in December 2022, amendments were made in Section 6.4. Labelling of non-retail containers.

## 1. SCOPE

This standard (formerly CAC/RS 76-1976) shall apply to quick-frozen bilberries of the species *Vaccinium myrtillus* L. as defined below and offered for direct consumption, without further processing, except for repacking, if required. It does not apply to the product when indicated as intended for further processing or for other industrial purposes nor to the product covered by the special standard for quick-frozen blueberries.

## 2. DESCRIPTION

### 2.1 Product definition

Quick-frozen bilberries is the product prepared from fresh, clean, sound, ripe bilberries of firm texture conforming to the characteristics of *Vaccinium myrtillus* L. with or without a dry sugar or a syrup and is packaged and frozen in an appropriate manner.

### 2.2 Process definition

Quick-frozen bilberries is the product subjected to a freezing process in appropriate equipment and complying with the conditions laid down hereafter. This freezing operation shall be carried out in such a way that the range of temperature of maximum crystallization is passed quickly. The quick-freezing process shall not be regarded as complete unless and until the product temperature has reached  $-18\text{ }^{\circ}\text{C}$  ( $0\text{ }^{\circ}\text{F}$ ) at the thermal centre after thermal stabilization. The recognized practice of repacking quick-frozen products under controlled conditions is permitted.

### 2.3 Handling practice

The product shall be handled under such conditions as will maintain the quality during transportation, storage and distribution up to and including the time of final sale. It is recommended that during storage, transportation, distribution and retail, the product be handled in accordance with the provisions in the *Code of Practice for the Processing and Handling of Quick Frozen Foods* (CXC 8-1976).<sup>1</sup>

### 2.4 Presentation

#### Style

Quick-frozen bilberries may be presented as free-flowing (i.e. as individual berries not adhering to one another) or non free-flowing (i.e. as a solid block).

## 3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

### 3.1 Optional ingredients

Sugars (sucrose, invert sugar, invert sugar syrup, dextrose, fructose, glucose syrup, dried glucose syrup).

### 3.2 Composition

#### 3.2.1 *Bilberries prepared with dry sugars*

The total soluble solids content of the liquid extracted from the thawed, comminuted sample shall be not more than 35 percent m/m nor less than 18 percent m/m, expressed as sucrose, as determined by refractometer at  $20\text{ }^{\circ}\text{C}$ .

#### 3.2.2 *Bilberries prepared with syrup*

The amount of syrup used shall be not more than that required to cover the berries and fill the spaces between them. The total soluble solids content of the liquid extracted from the thawed, comminuted sample shall be not more than 25 percent nor less than 15 percent m/m, expressed as sucrose, as determined by refractometer at  $20\text{ }^{\circ}\text{C}$ .

#### 3.2.3 *Definition of "defective" for composition*

Any sample unit that falls outside the limits for the soluble solids range specified in Section 3.2.1 and Section 3.2.2 shall be regarded as a "defective", provided it does not exceed the limits of the range by more than 5 percent m/m soluble solids.

#### 3.2.4 *Lot acceptance for composition*

A lot is considered acceptable for compositional criteria when the number of "defectives", as defined in Section 3.2.3, does not exceed the acceptance number (c) of an appropriate sampling plan with an acceptable quality limit (AQL) of 6.5. (See relevant Codex texts on methods of analysis and sampling).

### 3.3 Quality factors

#### 3.3.1 General requirements

Quick-frozen bilberries shall be:

- (a) of similar varietal characteristics;
- (b) of good colour;
- (c) free from foreign flavour and odour;
- (d) clean, sound and practically free from mould and other harmless foreign matter;

and with respect to visual or other defects subject to a tolerance, shall be:

- (e) practically free from sand and grit;
- (f) when presented as free-flowing, practically free from berries adhering one to another and which cannot be easily separated by hand without damage when in the frozen state;
- (g) practically free from extraneous vegetable matter (EVM);
- (h) reasonably free from cap stems (stalks);
- (i) practically free from green berries;
- (j) practically free from dissimilar varieties of edible berries other than bilberries;
- (k) reasonably free from blemished berries; and
- (l) reasonably free from undeveloped or mummified berries.

#### 3.3.2 Analytical requirements

Mineral impurities such as sand, grit and silt shall be not more than 0.05 percent m/m on the whole product (berries and packing medium, if any).

#### 3.3.3 Free-flowing characteristics

When presented as "free-flowing" a tolerance of 10 percent m/m shall be allowed for berries which are stuck together and not easily separated in the frozen state. The sample unit for "free-flowing" is the entire contents of the container or as large a quantity as practicable.

#### 3.3.4 Definitions for visual defects

- (a) **Extraneous vegetable matter (EVM)** – means leaves or portions of the bilberry plant, or other similar vegetable material which is harmless.
- (b) **Cap stems (stalks)** – means the immediate stem that attaches the bilberry to the plant, whether or not attached to the berry, and which is 2 mm, or greater in length.
- (c) **Green berries** – means completely uncoloured berries or berries that have a green cast that predominates over the normal reddish-purple colour of bilberries.
- (d) **Dissimilar varieties** – means other edible berries that are distinctly different in colour or shape, which have definitely different internal characteristics than bilberries.
- (e) **Blemished** – means bilberries which show visible signs of damage by insects or by pathological injury.
- (f) **Undeveloped or mummified** – means berries that are badly shrivelled, dried, or hard.

#### 3.3.5 Standard sample size

The sample size for evaluating visual defects, including application of tolerances, is 300 grammes of drained berries (see relevant Codex texts on methods of analysis and sampling).

#### 3.3.6 Tolerances for visual defects

Based upon examination of the standard sample unit as specified in Section 3.3.5 visual defects are classified as "minor" or "major" and assigned points in accordance with Table 1. To be acceptable, the sample unit shall not exceed the "total allowable points" for the respective categories, including **total**, in Table 1.

**TABLE 1**  
**(Sample unit 300 grammes)**

Defect	Unit of measurement	Defect categories		
		Minor	Major	Total
(a) EVM	Each piece < 1 cm <sup>2</sup>	1		
	Each piece 1 cm <sup>2</sup> and larger		2	
(b) Cap stems (stalks)	Each stem	1		
(c) Green berries	Each berry		2	
(d) Dissimilar varieties	Each berry		2	
(e) Blemished				
slightly	Each berry	1		
materially	Each berry		2	
(f) Undeveloped or mummified	Each berry		2	
<b>TOTAL ALLOWABLE POINTS</b>		<b>20</b>	<b>10</b>	<b>20</b>
Disintegrated, badly crushed or smashed 10% m/m				

### 3.3.7 Definition of "defective" for quality factors

Any sample unit taken in accordance with an appropriate sampling plan with an AQL of 6.5, (see relevant Codex texts on methods of analysis and sampling) shall be regarded as a "defective" for the respective characteristics, as follows:

- (a) that exceeds the tolerance for mineral impurities in Section 3.3.2;
- (b) that exceeds the tolerance for "free-flowing" in Section 3.3.3;
- (c) that exceeds the total allowable points for visual defects in any one or more of the categories in Table 1 (Section 3.3.6): or that exceeds the tolerance for disintegrated, badly crushed or smashed in Table 1 (Section 3.3.6).

### 3.3.8 Lot acceptance for quality factors

A lot will be considered acceptable with respect to quality factors when the number of "defectives" as defined in Section 3.3.7 does not exceed the acceptance number (c) of an appropriate sampling plan with an AQL of 6.5, (see relevant Codex texts on methods of analysis and sampling). In applying the acceptance procedure each "defective" (as defined in Section 3.3.7 subparagraphs [a] or [b] or [c]) is treated individually for the respective characteristics.

## 4. FOOD ADDITIVES

None permitted.

## 5. HYGIENE

**5.1** It is recommended that the product covered by the provisions of this standard be prepared and handled in accordance with the appropriate sections of the *General Principles of Food Hygiene* (CXC 1-1969),<sup>2</sup> and other codes of practice recommended by the Codex Alimentarius Commission which are relevant to this product.

**5.2** To the extent possible in good manufacturing practice, the product shall be free from objectionable matter.

**5.3** When tested by appropriate methods of sampling and examination, the product:

- shall be free from microorganisms in amounts which may represent a hazard to health;
- shall be free from parasites which may represent a hazard to health; and
- shall not contain any substance originating from microorganisms in amounts which may represent a hazard to health.

## 6. LABELLING

In addition to the requirements of the *General Standard for the Labelling of Pre-packaged Foods* (CXS 1-1985),<sup>3</sup> the following specific provisions apply:

### 6.1 The name of the food

6.1.1 The name of the product as declared on the label is "bilberries".

6.1.2 There shall appear on the label in conjunction with or in close proximity to the word "bilberries", the packing medium: "with (name of sweetener and whether as such or as the syrup)".

6.1.3 In addition, there shall appear on the label the words "quick-frozen", except that the term "frozen"<sup>i</sup> where this term is customarily used for describing the product processed in accordance with Section 2.2 of this standard.

### 6.2 Additional requirements

The packages shall bear clear directions for keeping from the time they are purchased from the retailer to the time of their use, as well as directions for thawing.

### 6.3 Bulk packs

In the case of quick-frozen bilberries in bulk, the information required above shall either be placed on the container or be given in accompanying documents, except that the name of the food accompanied by the words "quick-frozen" (the term "frozen" may be used in accordance with Section 6.1.3 of this standard) and the name and address of the manufacturer or packer must appear on the container.

### 6.4 Labelling of non-retail containers

The labelling of non-retail containers should be in accordance with the *General Standard for the Labelling of Non-Retail Containers of Foods* (CXS 346-2021).<sup>4</sup>

## 7. PACKAGING

Packaging used for quick-frozen bilberries shall:

- (a) protect the organoleptic and other quality characteristics of the product;
- (b) protect the product against microbiological and other contamination;
- (c) protect the product from dehydration and, where appropriate, leakage as far as technologically practicable; and
- (d) not pass on to the product any odour, taste, colour or other foreign characteristics.

## 8. METHODS OF ANALYSIS AND SAMPLING

For checking the compliance with this standard, the methods of analysis and sampling contained in the *Recommended Methods of Analysis and Sampling* (CXS 234-1999)<sup>5</sup> relevant to the provisions in this standard shall be used.

---

<sup>i</sup> "Frozen": This term is used as an alternative to "quick-frozen" in some English-speaking countries.

## NOTES

<sup>1</sup> FAO and WHO. 1976. *Code of Practice for the Processing and Handling of Quick Frozen Foods*. Codex Alimentarius Code of Practice, No. CXC 8-1976. Codex Alimentarius Commission. Rome.

<sup>2</sup> FAO and WHO. 1969. *General Principles of Food Hygiene*. Codex Alimentarius Code of Practice, No. CXC 1-1969. Codex Alimentarius Commission. Rome.

<sup>3</sup> FAO and WHO. 1985. *General Standard for the Labelling of Pre-packaged Foods*. Codex Alimentarius Standard, No. CXS 1-1985. Codex Alimentarius Commission. Rome.

<sup>4</sup> FAO and WHO. 2021. *General Standard for the Labelling of Non-Retail Containers of Foods*. Codex Alimentarius Standard, No. CXS 346-2021. Codex Alimentarius Commission. Rome.

<sup>5</sup> FAO and WHO. 1999. *Recommended Methods of Analysis and Sampling*. Codex Alimentarius Standard, No. CXS 234-1999. Codex Alimentarius Commission. Rome.